



Chemical Biology 2018

EMBO WORKSHOP



We have moved our website to embl.org/events. The content below is no longer being updated.

EMBL Courses and Conferences during the Coronavirus pandemic

With the onsite programme paused, many of our events are now being offered in virtual formats.

Registration is open as usual for many events, with back-up plans in place to move further courses and conferences online as necessary. Registration fees for any events affected by the COVID-19 disruption are fully refundable.

More information for participants of events at EMBL Heidelberg can be found [here](#).

Programme

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Day 1 - Wednesday 29 August 2018

| Time | Speaker |
|-------------|--|
| 11.00-13.00 | Arrival / Registration with light refreshments |
| 13.00-13.10 | Opening remarks |

| Time | Speaker |
|--------------------|--|
| 13.10-16.30 | Session 1: Drug and target discovery Chair: Maja Köhn, University of Freiburg |
| 13:10-13:45 | Nathanael S. Gray, Dana-Farber Cancer Institute, USA |
| 13:45-14:20 | Chemical Probes as tools for target validation Stefan Knapp, Goethe University Frankfurt, Germany |
| 14:20-14:35 | Mimicking Protein-Protein Interactions in Persistent Bacteria Anna Barnard, Imperial College London, UK |
| 14:35-15:05 | Coffee break |
| 15:05-15:40 | Priscilla Yang, Harvard Medical School |
| 15:40-16:15 | Mitochondrial Molecular Delivery Shana Kelley, University of Toronto, Canada |
| 16:15-16:30 | A layered systems pharmacology approach reveals a complex polypharmacology mechanism of action of the multikinase inhibitor foretinib in lung cancer Uwe Rix, H. Lee Moffitt Cancer Center & Research Institute, USA |
| 16:30-16:50 | Flash talks (1 slide / 2 min each): |
| | #52: Discovery of novel transcriptional regulation of NF-κB signaling via phenotypic screening and chemoproteomics (Mercedes Beyna, Biogen) |
| | #178: A click probe-based approach for visualization of drug-target interactions at single cell level (Anna Rutkowska-Klute, Cellzome) |
| | #129: Tripping up Bacterial LPS Transport: Discovery and Structural Basis of MsbA Antagonists (Christopher Koth, Genentech) |
| | #50: Targeting the inflammatory function of PCAF/GCN5 through a PROTAC approach (Zuni Bassi, GlaxoSmithKline) |
| | #217: Probing Oncogenic Gene Control via Target Protein Degradation (Georg Winter, CeMM Research Center for Molecular Medicine) |
| | #73: Antigen loading in synthetic vaccines – is more better? (Taylor Renée Cooney, Victoria University of Wellington) |
| | #40: Target Engagement-Mediated Amplification for Monitoring Drug-Target Interactions in Situ (Rasel A. Al-Amin, Uppsala University) |
| | #77: A cooperativity paradigm for small molecule stabilization of protein-protein interactions (Pim de Vink, Eindhoven University of Technology) |
| 16:50-18:30 | Poster session I (odd numbers plus #40, #50, #52, #178) |

| Time | Speaker |
|--------------------|---|
| | Keynote session: Stuart L. Schreiber Chair: Maja Köhn, University of Freiburg |
| 18:30-19:30 | Chemical biology-based approach to understanding and overcoming resistance of cancers to therapies Stuart L. Schreiber, Harvard University and Broad Institute, USA |
| 19:30-20:30 | Welcome reception with light refreshments |
| 20:30 | free evening |

Day 2 - Thursday 30 August 2018

| Time | Speaker |
|--------------------|---|
| 09:00-10:20 | Session 2: Chemical biology of post-translational modifications Chair: Nataliia Shymanska, EMBL Heidelberg |
| 09:00-09:35 | Inorganic Polyphosphate and Protein Polyphosphorylation Henning J. Jessen, University of Freiburg, Germany |
| 09:35-09:50 | Synthetic and single-molecule approaches reveal dynamic chromatin regulation Beat Fierz, EPFL, Switzerland |
| 09:50-10:05 | Acetylation blocks DNA damage-induced chromatin ADP-ribosylation Katharine Diehl, Princeton University, USA |
| 10:05-10:20 | In cell imaging of protein-specific methylation Franziska Doll, University of Konstanz, Germany |
| 10:20-10:50 | Coffee break |
| 10:50-12:30 | Session 3: Molecular optogenetics and synthetic biology Chair: Shana Kelley, University of Toronto |
| 10:50-11:25 | Synthetic biology approaches to new chemistry Michelle C. Chang, University of California, Berkeley, USA |
| 11:25-12:00 | Small molecule inhibitors of Shiga toxin trafficking Ludger Johannes, Institut Curie, France |
| 12:00-12:15 | Near-infrared light-activated Trk optokinases for regulation of cell signaling Anna V. Leopold, University of Helsinki, Finland |

| Time | Speaker |
|-------------|--|
| 12:15-12:30 | Optical control of cell signaling by single-chain photoswitchable kinases Xin Zhou, University of California, San Francisco, USA |
| 12:30-14:00 | Lunch Meet the speakers at 13:15 13:45 with Gray, Knapp, Yang, Kelley, Schreiber, Jessen, Chang, Johannes |
| 14:00-15:40 | Session 4: Nucleotide chemical biology Chair: Michelle C. Chang, University of California, Berkeley |
| 14:00-14:35 | Expanding the Scope of Methyltransferases Andrea Rentmeister, University of Münster, Germany |
| 14:35-14:50 | Development of fluorogen/protein hybrid probe for live-cell imaging of DNA methylation Yuichiro Hori, Osaka University, Japan |
| 14:50-15:05 | Bisulfite-independent epigenome profiling & epigenome-dependent genome editing Yi Chengqi, Peking University, China |
| 15:05-15:40 | Chemical biology of RNA modifications and catalytic DNA Claudia Höbartner, University of Würzburg, Germany |
| 15:40-16:00 | Flash talks (1 slide / 2 min each): #202: Protein Acylation is a General Regulatory Mechanism in Biosynthetic Pathway of Acyl-CoA Derived Natural Products (Minjia Tan, Shanghai Institute of Materia Medica) #220: Chemical tools reveal the bacterial sensor of a human peptide hormone (Megan Wright, University of Leeds) #59: Palladium-Mediated Allylation of Cysteine for Site-Selective Bioconjugation (Rolf Breinbauer, Graz University of Technology) #61: Synthesis strategies to genetically tagged small molecule libraries (Mateja Klika Skopic, TU Dortmund) #67: Peptide-based PP1 activator localizes to the cellular membrane (Jeremy Chojnacki, University of Freiburg) #51: Localizing Antifungal Drugs to the Correct Organelle Can Markedly Enhance their Efficacy (Raphael Benhamou, Tel Aviv University) #98: Targeting STING with covalent small-molecule inhibitors Simone Haag (Simone Haag, École Polytechnique Fédérale de Lausanne) #112: Non-canonical amino acids for photo-crosslinking and click chemistry (Jan-Erik Hoffmann, Oregon Health & Science University) |
| 16:00-16:30 | Coffee break & Meet the speakers with Rentmeister, Höbartner, Liu |

| Time | Speaker |
|--------------------|--|
| 16:30-18:30 | Poster session II (even numbers plus #51, #59, #61, #67) Keynote Session: David R. Liu Chair: Kai Johnsson, Max Planck Institute for Medical Research |
| 18:30-19:30 | Base Editing: Chemistry on a Target Nucleotide in the Genome of Living Cells David R. Liu, Harvard University, USA |
| 19:30-21:15 | Dinner |
| 21:15 | free evening |

Day 3 - Friday 31 August 2018

| Time | Speaker |
|----------------------|--|
| 09:00 - 12:20 | Session 5: Peptide and protein modifications Chair: Edward Lemke, JGU & IMB Mainz, EMBL Heidelberg |
| 09:00 - 09:35 | The Ubiquitin System Huib Ovaa, Leiden University Medical Center, The Netherlands |
| 09:35 - 10:10 | The KAHA Ligation for the Chemical Synthesis of Modified Proteins Jeffrey W. Bode, ETH Zurich, Switzerland |
| 10:10 - 10:25 | Site-specific ubiquitylation and SUMOylation using genetic code expansion Kathrin Lang, Technical University of Munich, Germany |
| 10:25 - 10:55 | Coffee break |
| 10:55 - 11:30 | Chemical labeling of endogenous proteins for imaging and functional inhibition Itaru Hamachi, Kyoto University, Japan |
| 11:30 - 12:05 | Functionalizing protein nanocages for biomedical applications Jan C.M. van Hest, Eindhoven University of Technology, The Netherlands |
| 12:05 - 12:20 | Coordination-Assisted Bioorthogonal Chemistry Kimberly Bonger, Radboud University, The Netherlands |

| Time | Speaker |
|----------------------|---|
| | Lunch |
| 12:20 - 14:00 | Meet the editors at 13:15 13:45 with James Moore (Royal Society of Chemistry), Kai Johnsson (ACS Chemical Biology), Carsten Schultz (Chemical Science), Michelle Chang (Chemical Science), Julia Eckhoff (Nature Communications), Joseph Unsay (Chemistry - A European Journal), Mishtu Dey (Cell Chemical Biology & Structure), Mathijs Vleugel (Nature Protocols), Ruben Ragg (ChemBioChem) |
| 14:00 - 17:10 | Session 6: Redox and metabolic enzyme chemical biology Chair: Kai Johnsson, Max Planck Institute for Medical Research |
| 14:00 - 14:35 | Swiss Army Man: a single molecule that interrogates cause & consequences of precision redox signaling Yimon Aye, École Polytechnique Fédérale de Lausanne, Switzerland |
| 14:35 - 15:10 | Decoding protein ADP-ribosylation networks in cells using chemistry-based approaches Michael S. Cohen, Oregon Health & Science University, USA |
| 15:10 - 15:25 | Visualizing Vitamin A metabolism Sebastiaan Koenders, Leiden University, The Netherlands |
| 15:25 - 16:05 | Coffee break & Meet the speakers with Ovaa, Bode, Hamachi, van Hest, Aye, Cohen |
| 16:05 - 16:40 | Lessons from Supramolecular Chemistry Stefan Matile, University of Geneva, Switzerland |
| 16:40 - 16:55 | Studying lipid function in living cells – technological advances André Nadler, Max Planck Institute of Molecular Cell Biology and Genetics, Germany |
| 16:55 - 17:10 | Semisynthetic biosensors for mapping cellular concentrations of nicotinamide adenine dinucleotides Corentin Gondrand, Max Planck Institute for Medical Research, Germany |

| Time | Speaker |
|----------------------|---|
| | Flash talks (1 slide / 2 min each): |
| | #66: Native Chemical Ligation–Photodesulfurization in Flow (Luke Dowman, The University of Sydney) |
| | #71: StatoMerocyanines: Ultrabright Fluorophores for Multicolor Imaging and Tracking of Lipid Droplets in Cells and Tissues (Tkhé Kyong Fam, University of Strasbourg) |
| | #85: Site-specific photoactivation to monitor local lipid metabolism and function (Suihan Feng, University of Geneva) |
| 17:10 - 17:30 | #144: Biocompatible Probes for Imaging of Cellular Structures (Grazvydas Lukinavicius, MPI for Biophysical Chemistry) |
| | #148: FR252921: Total Synthesis and Cellular Targets Identification (Yong Chen, University of Vienna) |
| | #185: Site-Selective Silicon Incorporation for Direct Fluorine Labelling of Proteins (Kymberley R. Scroggie, Flinders University) |
| | #205: Molecular design of MRI-based sensors for mapping of labile Zn²⁺ in biology (Deva Nishanth Tirukoti, Weizmann Institute of Science) |
| | #83: Controlling a GFP-targeting nanobody with small-molecule drugs in live cells (Helen Farrants, MPI for Medical Research) |
| 17:30 - 19:20 | Poster session III (all numbers) |
| 19:20 - 21:20 | Conference Dinner |
| 21:20 - 00:00 | Conference Party with band |

Day 4 - Saturday 1 September 2018

| Time | Speaker |
|----------------------|--|
| 09:00 - 12:00 | Session 7: Chemical biology of cellular reprogramming Chair: Carsten Schultz, EMBL Heidelberg and Oregon Health & Science University |
| 09:00 - 09:15 | Understanding enzymes specificities as a tool for cofactor engineering Paola Laurino, Okinawa Institute of Science & Technology Graduate University, Japan |
| 09:15 - 09:50 | Bioorthogonal cleavage reactions for gain-of-function protein manipulations Peng Chen, Peking University, China |
| 09:50 - 10:25 | (Chemo)enzymatic Precision Modification of Proteins Floris van Delft, Wageningen University, The Netherlands |

| Time | Speaker |
|---------------|---|
| 10:25 - 10:55 | Coffee break |
| 10:55 - 11:30 | Structure-based engineering of aminoacyl-tRNA synthetases for expansion of the mammalian and bacterial genetic codes and their in vivo and in vitro applications Shigeyuki Yokoyama, RIKEN, Japan |
| 11:30 - 11:45 | Genetic encoding of a stable O-GlcNAc analogue Andrii Gorelik, University of Dundee, UK |
| 11:45 - 12:00 | Cathepsin G activity reporters detect chronic lung inflammation by microscopy and flow cytometry Matteo Guerra, EMBL Heidelberg, Germany |
| 12:00 - 12:10 | Poster prize announcements |
| 12:10 - 12:40 | Coffee break & Meet the speakers with Matile, Chen, van Delft, Yokoyama |
| 12:40 - 13:40 | Keynote Session: Carsten Schultz, EMBL Heidelberg and Oregon Health & Science University |
| 13:40 - 13:50 | Closing remarks |
| 13:50 - 14:20 | Packed lunch |
| 14:25 | Bus departures |